(No Model.)

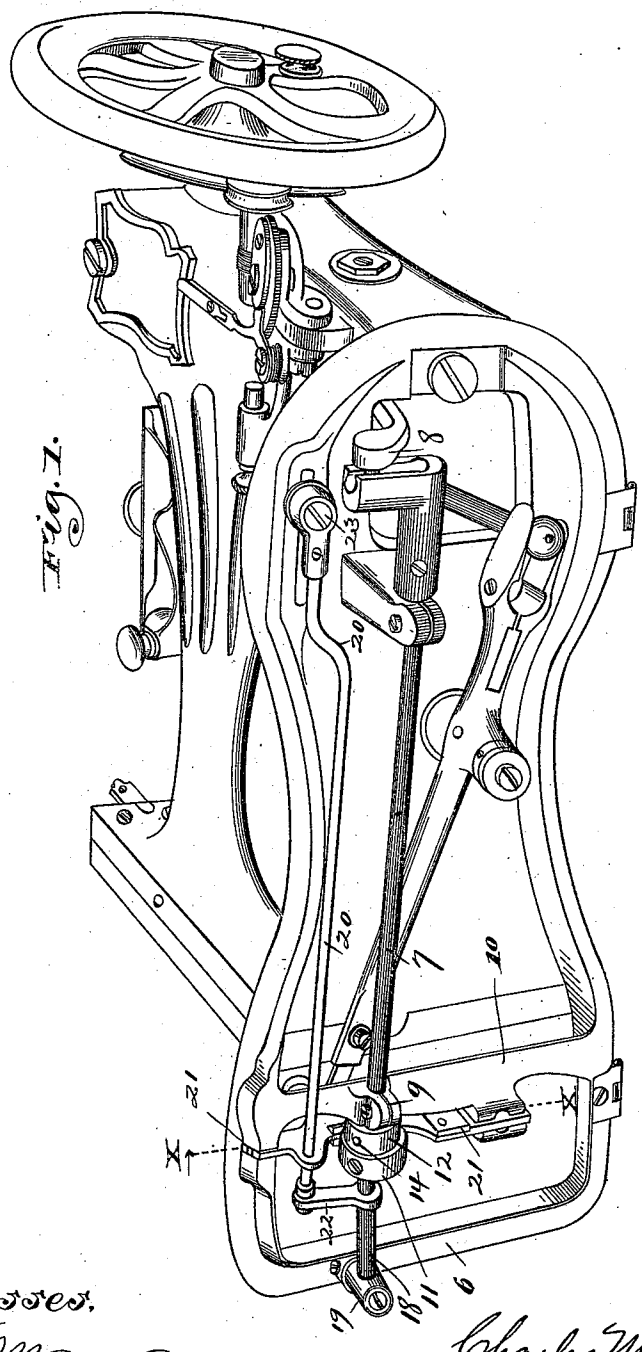
2 Sheets—Sheet 1.

C. MALDANER.

FEEDING MECHANISM FOR SEWING MACHINES.

No. 510,433. Patented Dec. 12, 1893.

Fig. 1.



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(No Model.) 2 Sheets—Sheet 2.

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FEEDING MECHANISM FOR SEWING MACHINES.

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Fig. 2.

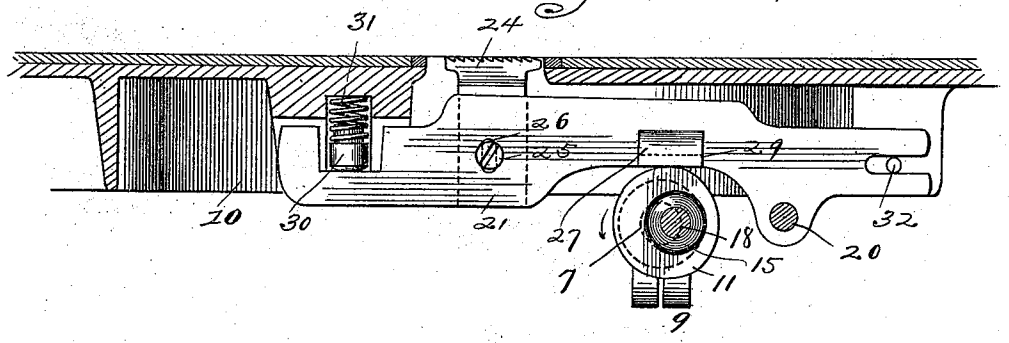


Fig. 3.

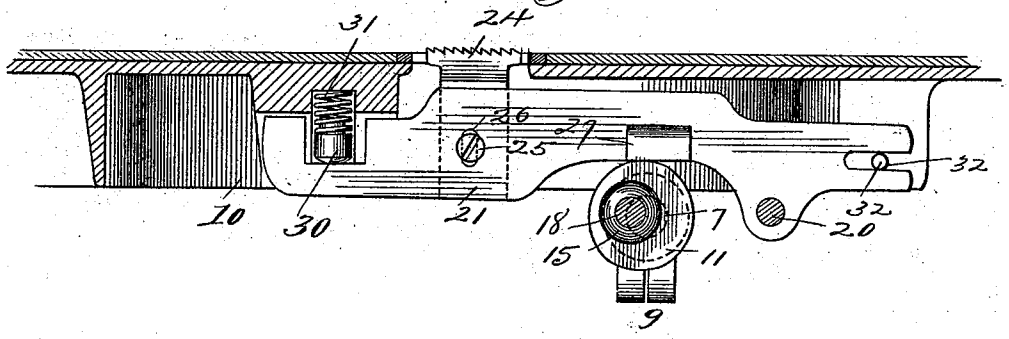


Fig. 4.

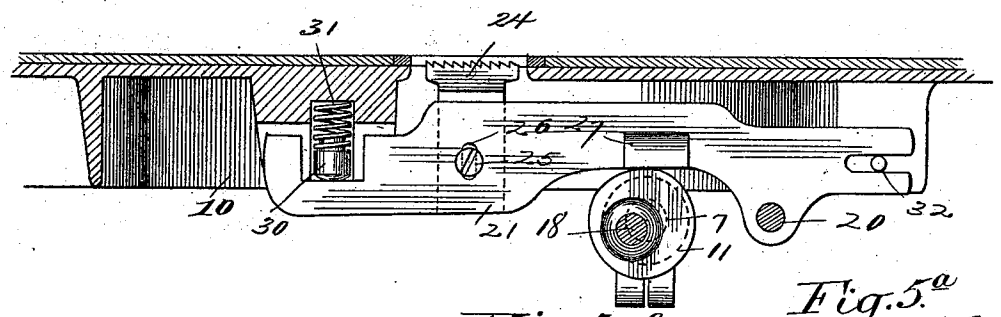


Fig. 5.

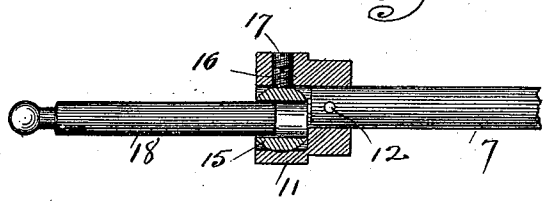
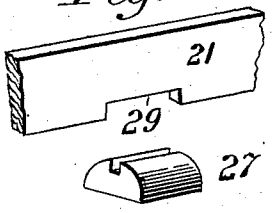


Fig. 5a



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UNITED STATES PATENT OFFICE.

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FEEDING MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 510,433, dated December 12, 1893.

Application filed August 24, 1892. Serial No. 443,933. (No model.)

To all whom it may concern:

Be it known that I, CHARLES MALDANER, a citizen of the United States, residing at Arlington Heights, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a specification.

This invention relates to certain improvements in sewing machines, and particularly, first, to an improvement in the feed mechanism whereby the feed dog is moved positively in its up, forward and return stroke and in such direction as to properly feed the material; second, to means for adjusting the feeding mechanism so that the length of feed may be varied from practically nothing to a long stitch, say six to the inch; third, to a construction whereby excessive wear between the feed bar and the actuating means therefor is prevented; and, fourth, to a shuttle race cover whereby the breaking of the shuttle race is prevented.

In carrying out my invention I employ a feed dog which may be of usual construction and adjustably mounted upon an endwise reciprocating and vertically movable feed bar; a driving shaft for the feed bar, said shaft having an eccentric connection with a pitman and bearing on its end a cam which contacts with a shoe on the lower part of the feed bar and serves to give the latter its up, forward and back movements; a gyrating pin having an eccentric connection with the cam carried by the feed bar driving shaft, said pin having a ball and socket joint in said cam and a like joint at its opposite end; and an endwise movable bar arranged parallel or substantially so to the feed bar driving shaft, and having a link connecting it with said gyrating pin, the link having an eye through which the pin passes and adapted to be adjusted along said pin whereby to regulate the travel of the feed bar and consequently of the feed dog.

In the accompanying drawings, Figure 1 is a perspective view of the bottom of a sewing machine base showing the parts mentioned. Fig. 2 is a cross section through the base on the line *x x* showing the feed dog at the inception of its forward stroke. Fig. 3 is a similar view showing the feed dog at the end of its feeding stroke. Fig. 4 is a like view with the feed dog lowered and at the beginning of its return; and Fig. 5 is a detail view, partly in section, of the gyrating pin and showing the joint between said pin and its driving shaft. Fig. 5ª is a detail view of a part of the feed bar and a perspective view of a wearing shoe carried by the feed bar.

In the drawings, 6 represents the base of the machine in which is journaled a feed bar driving shaft 7, having an eccentric connection with the pitman 8, the latter being eccentrically driven from the main driving shaft. One of the bearings for the shaft 7 is formed in a lug 9, forming a part of the cover 10 for the race way, said cover inclosing the race way on two sides and strengthens the same so that danger of breaking is avoided. It also imparts considerable rigidity to the base of the machine with which it is integrally formed and furnishes a convenient abutment for the bearing 9 above mentioned. Shaft 7 carries at its end opposite its connection to the pitman the eccentric cam 11, having a hub 12 which affords a convenient means for securing it upon the shaft by means of a rivet 14. The cam is eccentrically bored, as shown in Fig. 5, and has fitted within the bore a ball 15, the latter being held from withdrawal while permitted to rock in its bearing by means of the jam screws 16, 17.

18 represents a gyrating pin having one of its ends socketed in the bore of the ball 15 and its outer end having also a ball bearing in the lug 19.

20 represents an endwise movable adjusting bar which is capable of sliding through an aperture in the feed bar 21 and having a link 22 provided with an eye through which the pin 18 passes. The bar 20 will be provided with a binding screw 23 having means (not shown) for locking it in any adjusted position.

The feed bar 21 slides in suitable ways in the base of the machine as is usual and has a seat therein to receive the shank of the feed dog 24, which has a set screw 25 working through a slotted aperture 26 in the feed bar. The feed bar carries on its lower edge the wearing shoe 27 which is made of highly

tempered steel slotted on its upper surface and secured in place by simply affixing it in a cut away portion 29 of the bar, as shown by the dotted line in Fig. 2. The rear end of the feed bar is normally depressed by means of a vertically moving pin 30 thrust downwardly by the spring 31, whose upper end is confined by the frame. The forward end of the feed bar is slotted and works on a pin 32, and slides in its ways when moved by the cam. The length of the movement of the feed bar and consequently the length of the stitch is regulated by moving the bar 20 endwise. The link can be drawn up to the cam thus giving the feed bar the longest stroke—say six stitches to the inch—and when the link is moved nearer the pivotal point of the gyrating pin the stitch is shortened and it may be so adjusted that the reciprocation of the feed bar will be practically nothing. A scale will be provided, as usual on the top of the base to indicate the proper adjustment of the feed bar.

The operation of the cam will be understood by reference to the drawings. It rotates in the direction of the arrow and its first action is to lift the feed bar as shown in Fig. 2 to a position to engage the material. The full side of the cam further lifts the feed bar and holds it in contact with the fabric, as in Fig. 3, while the forward motion is being imparted by the gyrating pin acting through the link and the bar 20. At the conclusion of the stroke the lean side of the cam is presented to the shoe and the spring 31, assisted by gravity, depresses the feed bar and the latter is returned to the starting point. The configuration of the cam is such that the feed bar moves forward and back in lines parallel to each other and to the surface over which the fabric moves. The engagement, feed and release are positive and the feed dog is kept in contact with the fabric throughout the length of the stroke. The wear is taken by the removable shoe and the several bearings are of such character that excessive wear is avoided.

I claim—

1. A feed mechanism for sewing machines, comprising in combination an endwise reciprocating and vertically movable feed bar, a horizontally arranged rotatable shaft, a cam thereon for raising the bar, a gyrating pin actuated by the shaft and an adjusting bar connected with the feed bar and pin, substantially as described.

2. A feed mechanism for sewing machines, comprising in combination the feed bar, a rotatable shaft, a cam carried thereby and adapted to lift the bar, a gyrating pin having one end socketed in the cam and its other end pivoted, an adjusting bar capable of sliding parallel to the rotatable shaft and connected to the feed bar and a link carried by the adjusting bar and slidably connected with the pin, substantially as described.

3. A feed mechanism for sewing machines, comprising in combination the feed bar, a rotatable shaft, a cam carried thereby and adapted to lift the bar, a gyrating pin having one end socketed in the cam and its other end pivoted, an adjusting bar capable of sliding parallel to the rotatable shaft and connected to the feed bar, and a link carried by the adjusting bar and slidably connected with the pin, and a spring to positively depress the feed bar, substantially as described.

4. In a sewing machine, the combination with the feed bar having a rectangular recess in its lower edge, of a friction shoe having its upper side slotted longitudinally to embrace the sides of the feed bar, said shoe being adapted to enter the recess of the feed bar, the ends of the slot in which form abutments for the ends of the shoe, a rotatable shaft, a cam thereon for raising the feed bar, and said cam being adapted to work against the shoe, substantially as described.

5. In a sewing machine, the combination with the base having an angular integral rib forming the bottom and one wall of the shuttle-race-way and having also an integral hanger or lug transversely perforated and a feed bar driving shaft having a bearing in the perforated lug, substantially as and for the purpose set forth.

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